



Getting Your Antimicrobial Stewardship Program Off the Ground in the Small and Rural Setting

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Disclosures

All planners, presenters, reviewers, and ASHP staff of this session report no financial relationships relevant to this activity.

Learning Objectives

- List the regulatory requirements that pertain to critical access hospitals in regard to antimicrobial stewardship.
- Identify key stakeholders necessary to implement an antimicrobial stewardship team at a rural facility.
- Discuss the antimicrobial stewardship gaps that may occur in the rural realm.
- Describe successful strategies used to educate staff and patients on antimicrobial stewardship.

Self Assessment Question 1 – Polling Slide

Which of the following is NOT an element of performance listed under The Joint Commission's antimicrobial stewardship standard (MM.09.01.01)?

- a) Organizational leaders establish antimicrobial stewardship as a priority
- b) Education is provided to staff regarding antimicrobial stewardship
- c) The antimicrobial stewardship program identifies a list of restricted antibiotics
- d) An antimicrobial stewardship program is to involve a multidisciplinary team

Self Assessment Question 2 – Polling Slide

Which of the following is a tool that can be used to educate staff on antimicrobial stewardship?

- a) Annual computer based training modules required by all staff
- b) In person training during new hire orientation
- c) News capsules or newsletters
- d) All of the above

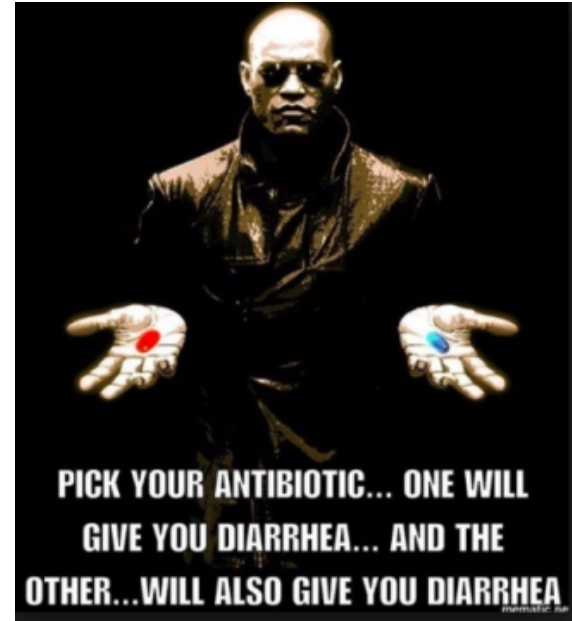
Self Assessment Question 3 – Polling Slide

Which of the following strategies can help overcome barriers of antimicrobial stewardship programs in the small and rural setting?

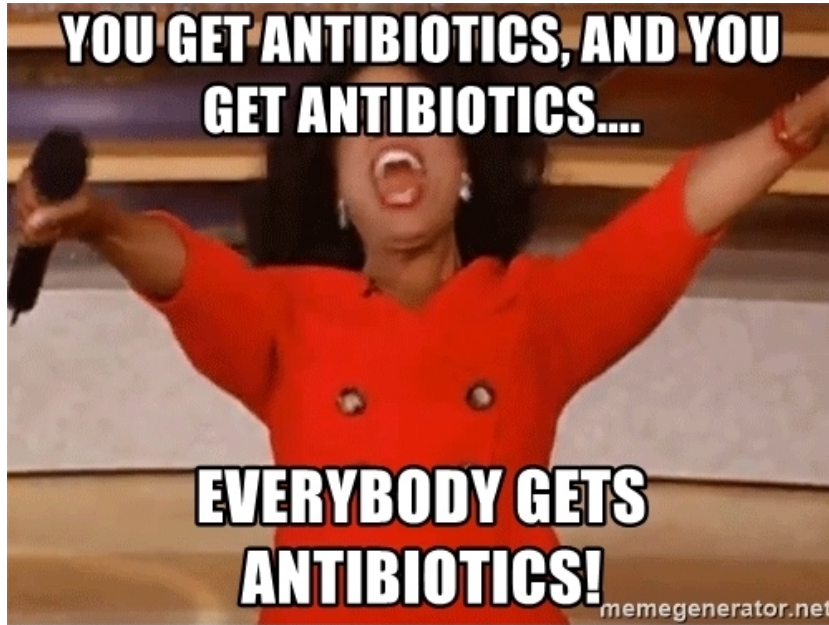
- a) Consultation services
- b) Telehealth
- c) Information technology
- d) All of the above

Antimicrobial Stewardship: Enough Already!

- Hot topic for years
- Regulatory bodies requiring stewardship programs
 - CDC
 - CMS
 - States
 - Health Systems
- Easier said than done



Antimicrobial Stewardship: Enough Already!



117 Years! World's Oldest Woman Says Piptaz 4.5g iv qid Is the Secret

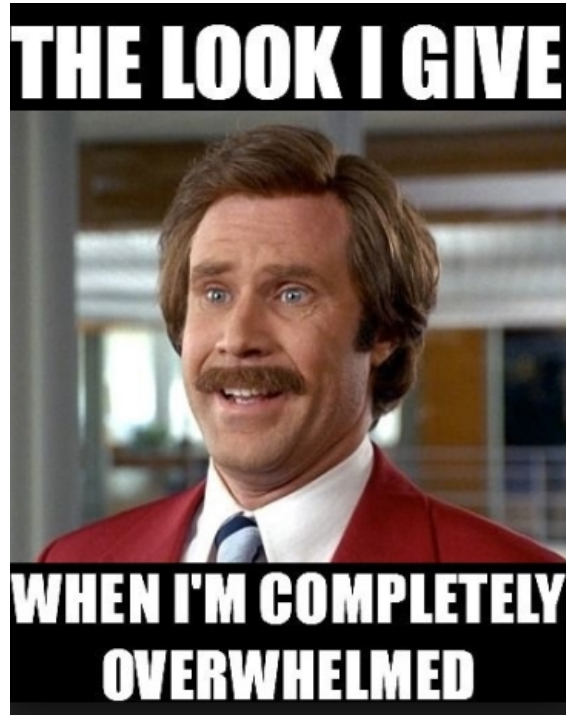
04-19-2017 - Charlene Aaron



The Joint Commission Standards (MM.09.01.01)

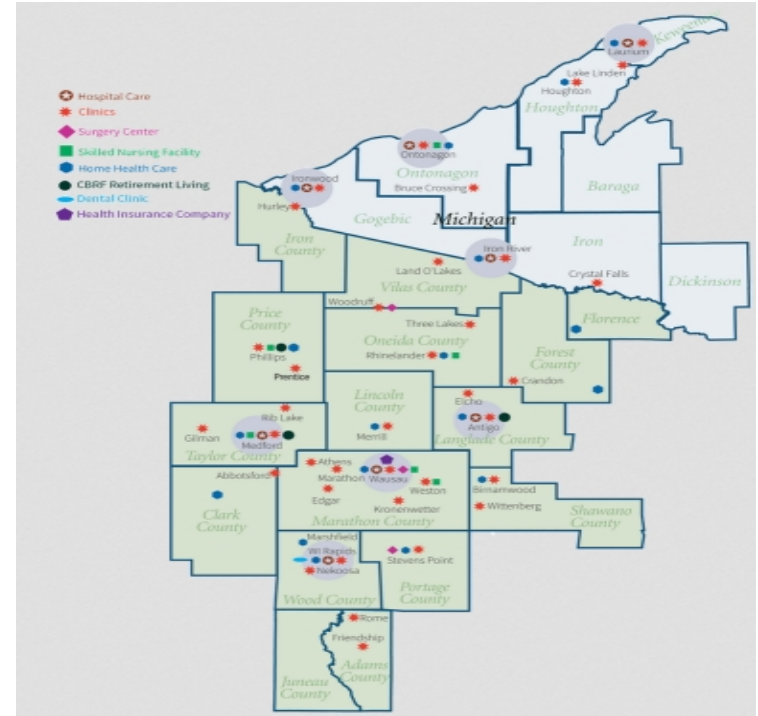
1. Leadership commitment
2. Staff education
3. Education to patients and families (removed)
4. Multidisciplinary team
5. Program encompasses the CDC core elements
6. Multidisciplinary protocols
7. Collects, analyzes and reports data
8. Takes action on improvement opportunities

Where Do You Start?



Practice Setting

- 8 hospital health system serving WI and Upper MI
- 6 CAH
- 50+ clinics, home health, hospice, LTC, Critical Care Transport



Where Do You Start?

- Identify core group
- Draft an organized layout of standards



Where Do You Start?

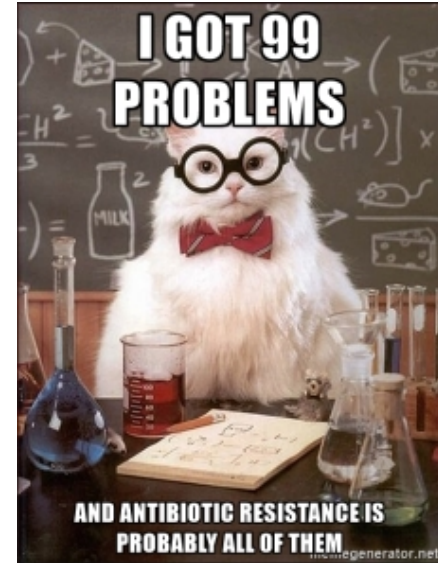
AMHC Antimicrobial Stewardship Charter						The
Joint Commission - MM.09.01.01						
1. Leadership establishes antimicrobial stewardship as a priority. Accountability documents Budget plans Infection Prevention Plans Performance Improvement plans Strategic Plans EMR use to collect AMS data						Examples:
Task	Target completion date	Committee approvals needed	Committee communications needed	Professional resources needed	Tangible resources needed	Date of completion
Modify IP Plan to include Antimicrobial Stewardship	July 30 17 ¹	N/A	N/A	Senior Leadership for budgeting only	None	Complete
Tactics						Due Date
AMS charter progress updates to leadership - Finished initial charter to Rick N and Barb L						Completed
Compensation budget for provider and pharmacy champions - Senior leadership consideration						Tentative future Initiative
FTE summary for AMS work to leaders - Codee Misty and I will do a time study for next 3 months to present to leadership as basis to determine FTE needs for AMS needs at AMHC						Tentative future Initiative
Misty to add AMS needs to IP risk assessment and plan						Completed August 2017
Pt days on antibiotics and use by antibiotic reports from EMR for data tracking - collecting						Completed

Where Do You Start?

Initiative	MOS	Implementation plan	Hospital 1	Hospital 2	Hospital 3	Hospital 4	Hospital 5	Hospital 6	Hospital 7	Hospital 8	Hospital 9	Hospital 10	Hospital 11
<p>JC Element of Performance Measures MM.09.01.01-</p>	<p>MM.09.01.01, EP2 Educate staff and licensed independent practitioners involved in antimicrobial ordering, dispensing, administration, and monitoring about antimicrobial resistance and antimicrobial stewardship practices. Education occurs upon hire and annually thereafter.</p>	<p>5.4.16--> Education subgroup was formed to address this topic. --> CPS has pharmacy portal for pharmacist to complete. --> Pharmacist Competencies were completed in FY15 --> Antibogram orientation occurs upon hire and annually.</p> <p>ACTION PLAN 1. Develop CBT for provider- Hire and annually. - Antibogram, system policy,</p>							<p>Pharmacists will have competencies this fall. Providers need education, RNs need education</p>				<p>All pharmacists have training. Have opportunities for LIPs/Physicians</p>
		<p>ACTION PLAN 1. Develop CBT for provider - Hire and annually. - Antibogram, system policy Notes: - 9.19.16--> Education subteam has draft of CBT. Q/S council provided feedback to ensure we work with credentialing department of implement required education</p>											038
		<p>2. Assign CBT to all Licenses Independent practitioners Notes</p>							<p>Request sent to local credentialing department for cascading</p>				

Where Do You Start?

- Recruitment of committee members
- Education/certification if feasible for providers/RPHs
- Leadership engagement



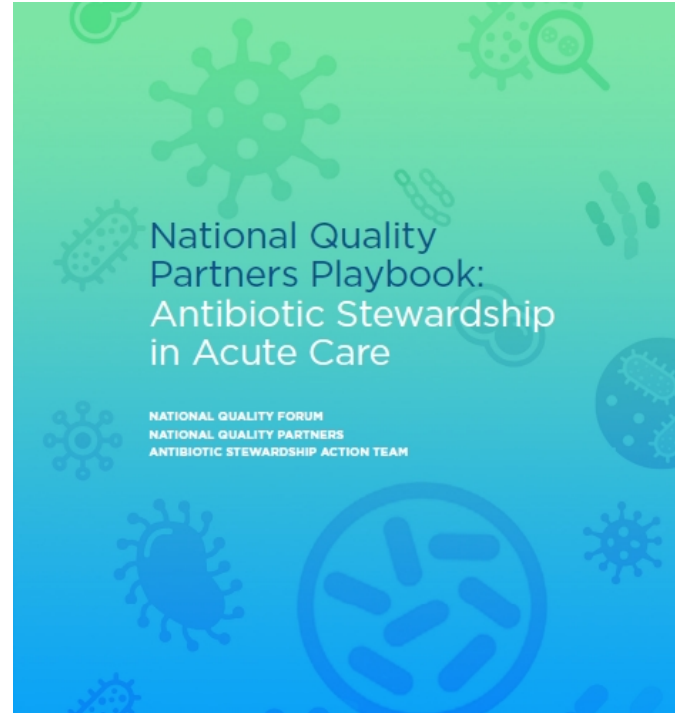
Recruiting The A-Team

- Outlined by TJC (EP4)
 - ID physician
 - Infection preventionist
 - Pharmacist
 - Practitioner
- Also highly recommend:
 - IT
 - Front line staff (RN/CNA/Medical Assistants)
 - Quality
 - Leadership
 - Lab



Now That Everyone Has Arrived

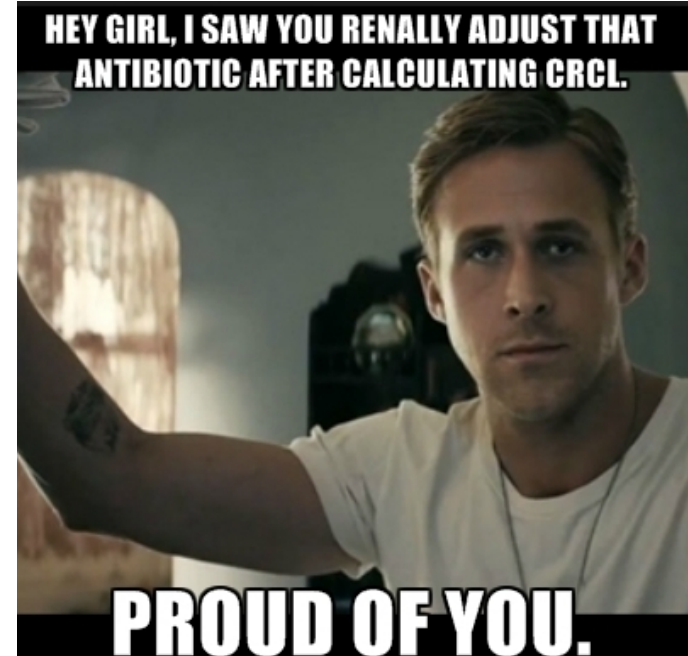
- Review the tools
- Establish goals
- Develop a policy outlining objectives and goals of your program



<https://www.cdc.gov/antibiotic-use/healthcare/implementation/core-elements.html>

Now That Everyone Has Arrived

- Tackle low hanging fruit
- Identify opportunities feasible with current resources available
 - IV to PO, renal dosing, PK/PD dosing, pharmacy driven vanco/AG protocol



The Wheels Are Turning

- Some education examples
 - Computer based training
 - Orientation education for all new employees
 - Education in after visit summary/discharge instructions to patients sent home on an antibiotic
 - News capsules
 - Community education
 - Intranet site

The Wheels Are Turning

- Tracking and measuring (involve IP, IT)
 - Track trends and meaningful information
 - Provider prescribing trends/scorecard
 - Utilizing information IP is already reporting



Health System Resources

- ID physician(s)
- ID pharmacist(s)
- IT resources
- Lab



Examples Utilizing Health Systems

- Best Practice Alerts
- Indication “buttons” when ordering antibiotics
- “Blue Card”
- System Scorecard



Examples Utilizing Health Systems – “Blue Card”

# SUBJECTS	ASPIRUS REFERENCE LAB ANTI-BIOGRAM REPORTED AS % SUSCEPTIBLE JAN 2017-DEC 2017 GRAM-POSITIVE COCCI	Ampicillin	Oxacillin	Penicillin	Cefazolin	Cloxacillin	Erythromycin	Levofloxacin	Ceftriaxone*	Synergy	Moxifloxacin	Rifampin*	Trimethoprim	Vancomycin	
69	<i>Enterococcus faecium</i>	29		26						SYN 88	35		36	57	
1129	<i>Enterococcus faecalis</i>	100		99						SYN 89	86		21	100	
2432	<i>Staphylococcus aureus</i>		87	99		74	52	69	99	99	99	100	92	97	
1628	MRSA (87% of <i>Staph aureus</i>)		100			81	70	89	100	99	99	100	95	98	
904	MRSA (33% of <i>Staph aureus</i>)		0			56	16	29	98	96	99	99	97	94	
206	<i>Staphylococcus coagulans</i>		71	25		67	49	78	96	99	99	99	79	89	
493	<i>Staphylococcus epidermidis</i>		40	10		70	41	59	90	99	99	99	88	99	
285	<i>Staphylococcus lugdunensis</i>		91	93		88	84	99	100	100	100	100	96	99	
261	<i>Staphylococcus saprophyticus</i>		56			71	39	100	100	100	100	100	91	95	
114	<i>Streptococcus agalactiae</i> (GrpB)			100		41							13	100	
72	<i>Streptococcus pneumoniae</i>					77	44	100					60	100	
	7.1 Non-meningitis				98	94									
	1 Meningitis^				100	100									
	CY 2017 <i>Haemophilus influenzae</i> n=123, 43% Beta-lactamase positive *Should not be used if used to treat staphylococcal infections SYN: Synergy with Ampicillin or Vancomycin ^ <i>Strep pneumoniae</i> Meningitis breakpoints are lower than pneumonia/bacteremia														

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# SUBJECTS	ASPIRUS REFERENCE LAB ANTI-BIOGRAM REPORTED AS % SUSCEPTIBLE JAN 2017-DEC 2017 GRAM-NEGATIVE BACILLI	Ampicillin	Ampicillin/Sulbactam	Pip/Tazo	Aztreonam	Cefepime	Ceftazidime	Ceftazidime/Avibactam	Cefepime	Trimethoprim	Levofloxacin	Ceftriaxone	Tobramycin	Moxifloxacin	Ertapenem	Meropenem
242	<i>Citrobacter freundii</i>			88	88		88	86	99	84	91	90	94	90	99	99
163	<i>Enterobacter aerogenes</i>			94	94		96	93	99	98	96	98	98	29	99	100
345	<i>Enterobacter cloacae</i> complex			87	90		89	89	98	89	97	99	100	41	97	98
8232	<i>Escherichia coli</i>	65	69	97	96	90	95	95	96	85	85	94	95	97	100	100
303	<i>Klebsiella oxytoca</i>			62	94	95	63	97	98	98	98	97	97	89	100	100
1334	<i>Klebsiella pneumoniae</i>			88	97	98	96	98	98	93	98	98	99	40	100	100
604	<i>Proteus mirabilis</i>	78	84	100	98	91	98	98	98	69	65	77	78		100	100
575	<i>Pseudomonas aeruginosa</i>			98				95	96		81	97	100			97
91	<i>Serratia marcescens</i>			99			99	99	99	99	98	98			99	99
32	<i>Acinetobacter baumannii</i>			97				78		97	97	97	97			100

Examples Utilizing Health Systems – “Blue Card”

I. ANTIMICROBIAL STEWARDSHIP

- 1) Before initiating empiric therapy or changing antibiotics (abx) due to lack of response to a current regimen, make certain that all relevant cultures have been obtained or repeated.
- 2) Switch & De-escalate: “switch” IV to PO, and change to narrower-spectrum agent(s) (“de-escalate”) based on microbiology results.
 - Consider discontinuing Vancomycin if: cultures are negative for MRSA, MRSE, or penicillin-resistant Enterococcus; and, no hx of MRSA colonization; and, no Type I allergy to penicillins (PCNs).
 - Combination therapy with [Ciprofloxacin OR Levofloxacin] PLUS [Pip-tazo, Cefepime, OR Aztreonam] is not beneficial beyond 48h - [Cipro or Levo] should be discontinued.
- 3) ESBL - Ertapenem is the drug of choice for infections due to ESBL-producing Gram-negative rods, except for Pseudomonas, which would require Meropenem.
- 4) Bioavailability: Levofloxacin, TMP/SMX, Clindamycin, Azithromycin, Fluconazole, and Metronidazole are highly bioavailable (90-100% GI absorption). They should be given PO if the GI tract is functional.
- 5) Use of Cephalosporins in Patients with Penicillin (PCN) Allergy: After taking a careful history, cephalosporins may be given safely to any patient without a history of a Type I rxn to PCN (immediate hypersensitivity – anaphylaxis, hives, angioedema).
- 6) Empiric antimicrobial choices in EPIC order set: **-AWH Blue Card – Empiric Antibiotics**

II. SEPSIS OF UNKNOWN ETIOLOGY

- 1) Community-Acquired/Normal Host:
Ceftriaxone 2g q 24h PLUS Vancomycin
± Tobramycin x1 (if septic shock)
- 2) Health Care-Associated/Compromised Host:
[Pip-Tazo 3.375g q8h (x4h) PLUS Vancomycin]
OR [Cefepime 1g q6h PLUS Vancomycin]± Tobramycin x1 with above options (if septic shock)
- 3) Type I PCN Allergy:
Aztreonam 2g q8h PLUS Vancomycin
PLUS Tobramycin 7mg/kg q24h

III. SKIN AND SOFT TISSUE INFECTIONS

- Nonpurulent/Moderate Severity (Cellulitis):
Preferred: Penicillin-G 4 million units q6h
(Alternative: Cefazolin 1-2g q8h)
 - Type I PCN Allergy: Vancomycin
- Purulent (Abscess): I&D + C&S.
TMP/SMX 1-2DS q12h OR Doxycycline 100mg q12h (if severe: Vancomycin). Switch to Nafcillin or Cefazolin if MSSA in C&S.
- Nonpurulent/Severe (Necrotizing): Surgical intervention (C&S).
Pip-Tazo 3.375g q8h (x4h) PLUS Clindamycin 600mg q8h PLUS Vancomycin
 - Type I PCN Allergy: Aztreonam 2g q8h
PLUS Metronidazole 500mg q8h PLUS Linezolid 600mg q12h
- Diabetic or Ischemic Foot Infection (AFTER deep tissue, or bone biopsy culture):
[Pip-tazo 3.375g q8h (x4h) PLUS Vancomycin]
OR [Cefepime 1g q6h PLUS Vancomycin PLUS Metronidazole 500mg q8h]
 - D/C Vanco if no MRSA/MRSE/Enterococcus
 - Type I PCN Allergy: Aztreonam 2g q8h
PLUS Metronidazole 500mg q8h
PLUS Vancomycin

IV. COMMUNITY-ACQUIRED PNEUMONIA (CAP)

- Ceftriaxone 1g q 24h
PLUS [Azithromycin 500mg q 24h OR Doxycycline 100mg q12h]
 - Type I PCN Allergy: Levofloxacin 750mg q 24h
- If aspiration, add Metronidazole to above regimens

V. HOSPITAL-ACQUIRED/VENTILATOR-ASSOCIATED PNEUMONIA (HAP/VAP)

- [Cefepime 1g q6h OR Pip-Tazo 3.375g q8h (x4h)] PLUS Vancomycin (D/C Vancomycin at 48h if no MRSA in a quality respiratory culture)
 - Type I PCN Allergy: Aztreonam 2g q8h PLUS Tobramycin 7mg/kg q24h PLUS Vancomycin
- Consider addition of inhaled Tobramycin
- If aspiration, add Metronidazole to [Cefepime OR Aztreonam] above
- Duration – 7 days (including Pseudomonas)

Examples Utilizing Health Systems – “Blue Card”

Intravenous Antimicrobial Renal Dose Adjustments					
Antimicrobial	Usual Dose	CrCl 50-30mL/min	CrCl 30-10mL/min	CrCl < 10mL/min	HD*
Ampicillin	1-2g q4-6h	1-2g q6-8h		1-2g q8-12h	HD: 1-2g q8-12h
Ampicillin/Sulbactam	1.5-3g q6h	1.5-3g q6-8h	1.5-3g q12h	(<15 mL/min) 1.5-3g q24h	HD: 1.5-3g q24h (post HD)
Aztreonam	1-2g q8h	1-2g q8h	1-2g q12h	1-2g q24h	HD: 1-2g q24h (post HD)
Cefazolin	1-2g q6h		(+25 mL/min) 0.5-1g q12h	1g q24h	HD: 1g q24h (post HD)
Cefepime	1g q6h	(60-30mL/min) 1g q8h	1g q12h	1g q24h (post HD)	
Cefepime (Neutropenic fever)	2g q6h	(60-30mL/min) 2g q12h	1g q12h	1g q24h (post HD)	
Ciprofloxacin	400mg q12h		400 mg q24h		HD: 400mg q24h (post HD)
Ciprofloxacin (Pseudomonas, critically ill)	400mg q8h		400 mg q12h	400 mg q24h	HD: 400mg q24h (post HD)
Ertapenem	1g q24h		500mg q24h		HD: 500mg q24h (post HD)
Fluconazole	100-400mg q24h	50% of dose q24h			HD: 50% of dose q24h (post HD)
Levofloxacin	500mg q24h	(50-20mL/min) 500mg x1, then 250mg q24h	(20-10mL/min) 500mg x1, then 250mg q48h	500mg x1, then 250mg q48h	
Levofloxacin (nosocomial PNA, skin, intraabdominal, pyelo)	750mg q24h	(50-20mL/min) 750mg q48h	(20-10mL/min) 750mg x1, then 500mg q48h	750mg x1, then 500mg q48h	
Meropenem	500mg q6h	(50-26 mL/min) 500mg q8h	(25-10 mL/min) 500mg q12h	500mg q24h	HD: 500mg q24h (post HD)
Penicillin G	2-4 mU q4	1-3 mU q4h		1-2 mU q6h	HD: 1-2 mU q6h
Piperacillin/Tazobactam (Extended-infusion)	3.375g q8h	3.375g q8h	(<20mL/min) 3.375g q12h	3.375g q12h	
TMP/SMX (Dose based on TMP)	5mg/kg q12h		5mg/kg q12h (post HD)		
TMP/SMX (Dose based on TMP, PCP treatment)	5 mg/kg q6-8h		2.5 mg/kg q6-8h	2.5 mg/kg q8h	HD: 2.5 mg/kg q8h
Amikacin, Gentamicin Tobramycin, Vancomycin	Dosing per pharmacy				

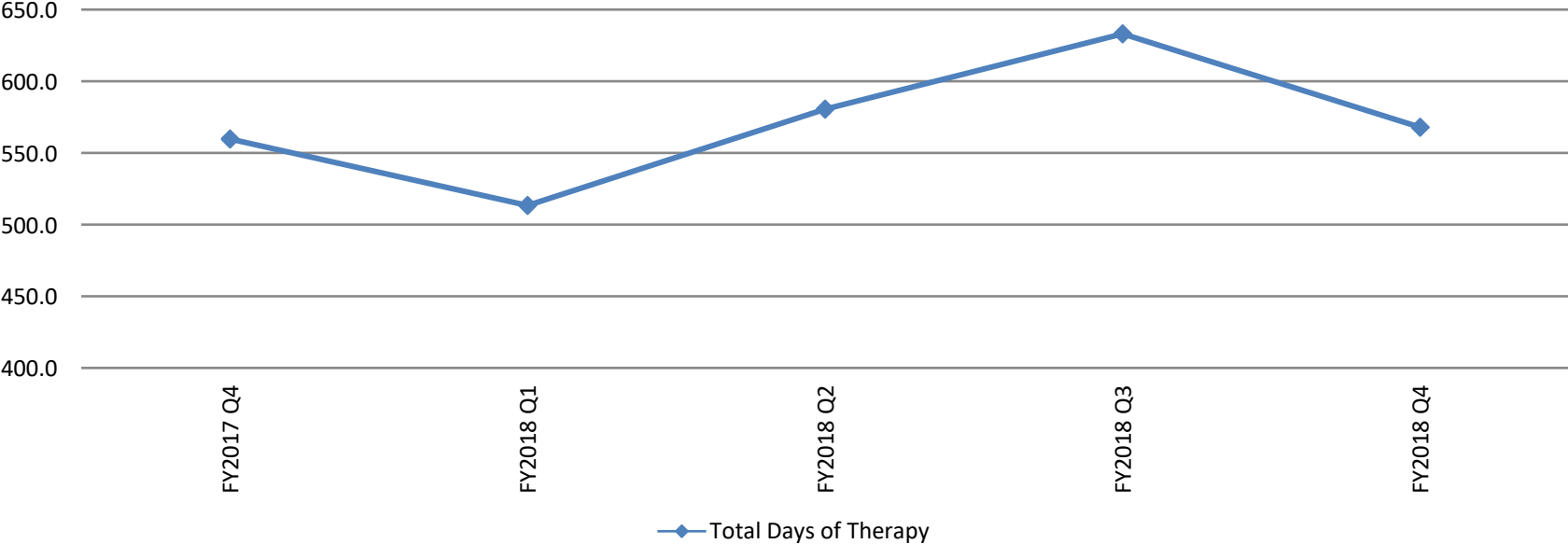
*For antimicrobials dosed every 24 hours in patients on hemodialysis, doses should be administered after dialysis on dialysis days. Alternatively, all doses may be administered once daily in the evening to ensure administration after dialysis on dialysis days.

Examples Utilizing Health Systems – Scorecard

	FY2017 Q4	FY 2017	FY2018 Q1	FY2018 Q2	FY2018 Q3	FY2018 Q4	FY 2018	% Change From Baseline	% Change FY2018 Q4 vs FY2017 Q4	% Change FY2018 vs FY2017
AMH	Apr-June 17	July 16 - June 17	July-Sep 17	Oct-Dec 17	Jan-Mar 18	Apr-June 18	July 17 - June 18			
AMH ASP FY2018										
Total Days of Therapy	559.7	544.2	513.3	580.5	633.1	567.9	577.6	4.3%	1.5%	6.1%
Numerator - Days of antibiotics	375	1,218	250	310	402	322	1,284			
Denominator - 1,000 Days Present	670	2,238	487	534	635	567	2,223			
Baseline	505		544	544	544	544				
Goal										
Clostridium difficile rate (SIR)										
Numerator - Number of Cases										
Baseline										
Goal										
Intervention Acceptance Rate										
Numerator - Accepted iVents										
Denominator - Total Actionable iVents										
Baseline										
Goal										
Specific Utilization										
Fluorquinolones IV/PO	77.6	75.1	61.6	54.3	77.2	86.4	70.6	15.1%	11.3%	-5.9%
Numerator - Days of antibiotics	52	168	30	29	49	49	157			
Denominator - 1,000 Days Present	670	2,238	487	534	635	567	2,223			
Baseline	99		75	75	75	75				
Goal										
β-lactam + FQ	26.9	17.0	14.4	3.7	23.6	19.4	15.7	14.3%	-27.8%	-7.3%
Numerator - Days of antibiotics	18	38	7	2	15	11	35			
Denominator - 1,000 Days Present	670	2,238	487	534	635	567	2,223			
Piperacillin/Tazobactam	122.4	88.9	55.4	56.2	91.3	72.3	70.2	-18.7%	-40.9%	-21.1%
Numerator - Days of antibiotics	82	199	27	30	58	41	156			
Denominator - 1,000 Days Present	670	2,238	487	534	635	567	2,223			
Cefepime	10.4	15.2	24.6	15.0	17.3	10.6	16.6	-30.3%	1.3%	9.6%
Numerator - Days of antibiotics	7	34	12	8	11	6	37			
Denominator - 1,000 Days Present	670	2,238	487	534	635	567	2,223			

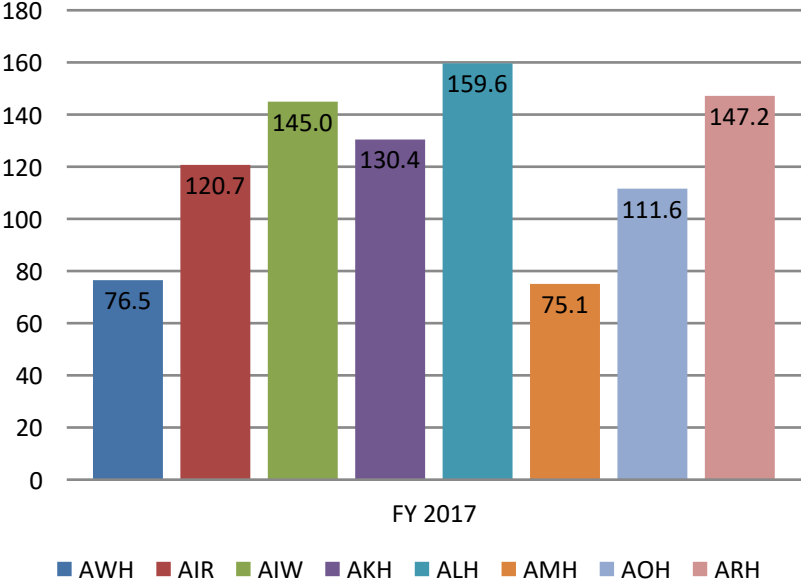
Examples Utilizing Health Systems – Scorecard

Total Abx DOT per 1,000 DP

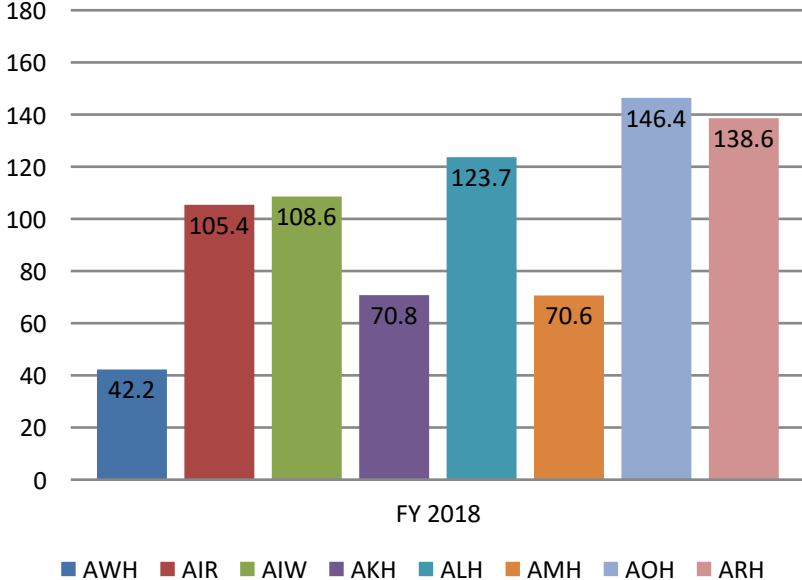


Examples Utilizing Health Systems – Scorecard

FQ DOT per 1,000 DP

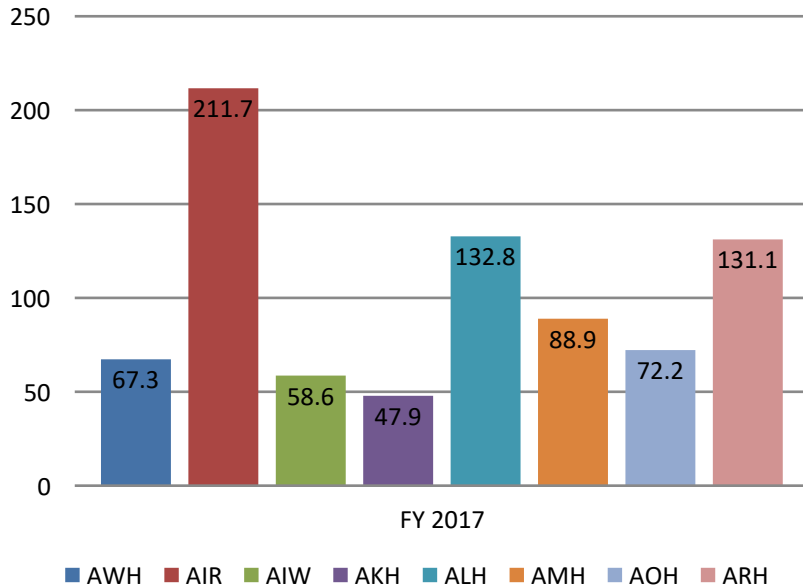


FQ DOT per 1,000 DP

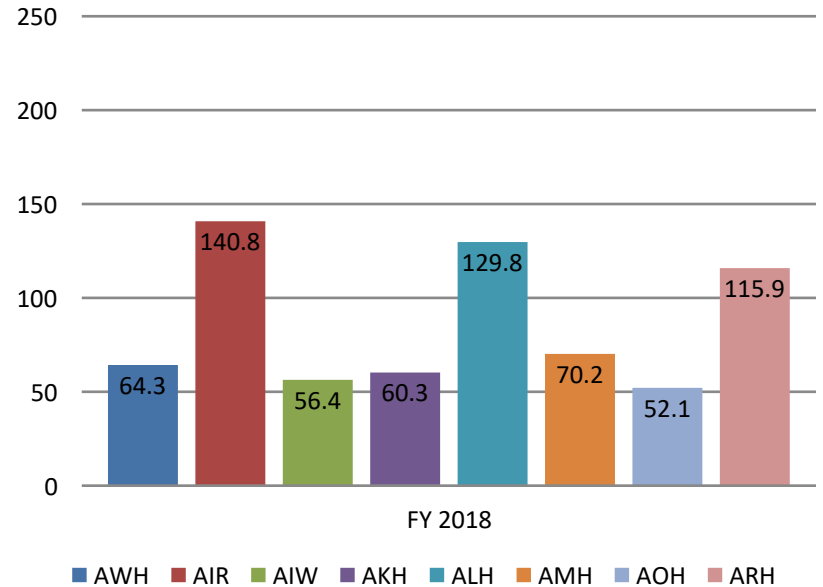


Examples Utilizing Health Systems – Scorecard

Pip-tazo DOT per 1,000 DP



Pip-tazo DOT per 1,000 DP



Our 2018 TJC Visit

CDC Core Element Utilization at AMHC

1. Leadership Commitment

- Formal statement signed by senior leadership attesting support and commitment to antimicrobial stewardship at AMHC (**appendix A**).

2. Accountability

- Dr. Keith Bratulich, MD (AMHC hospital and clinic provider) and Codee Peterson, PharmD, RPH (inpatient RPH) appointed co-chairs to AMHC Antimicrobial Stewardship Committee.
- Dr. Troy Sennholz, MD (AMHC emergency department provider) sits on AMHC AMS committee.
- Access to system ID resources including Dr. William Bowler, MD, infectious disease specialist, who practices at Aspirus Wausau Hospital and co-chairs the Aspirus Antimicrobial Stewardship Subcommittee.
- Additional AMHC AMS committee comprised of multidisciplinary team including quality director, front line nursing staff, lab director, infection prevention RN.
- All core members of the AMHC AMS committee are responsible for communicating information, initiatives, and antibiotic improvement efforts to their corresponding departments and colleagues.
- Several members of the AMHC AMS committee also attend the Aspirus Wausau Antimicrobial Stewardship Subcommittee.
- The AMHC antimicrobial stewardship committee has established and is responsible for the following outcomes for FY18:
 - 1% overall reduction in inpatient antibiotic use as measured by the Aspirus system scorecard (see "Tracking and Monitoring Antibiotic Prescribing, Use and Resistance" for specific work).
 - Implementation of antibiotic time outs (see "Actions to Support Optimal Antibiotic Use" for specific work).
 - Staff education (see "Education of Clinicians and Patients and Families" for specific work).

3. Drug Expertise

- Codee Peterson, PharmD completed the Society of Infectious Disease Pharmacists' Antimicrobial Stewardship Certificate Program in October 2016. Past professional experience includes involvement in a health-system antimicrobial stewardship team as local site lead responsible for implementation of system initiative antimicrobial stewardship efforts.
- Access and close collaboration with Tristan O'Driscoll, PharmD, MPH, BCPS, clinical pharmacy specialist – infectious disease/antimicrobial stewardship currently leading

Aspirus system efforts in antimicrobial stewardship. Tristan received his PharmD and MPH degrees concurrently from the University of Wisconsin-Madison. He completed his PGY1 pharmacy practice residency and PGY2 specialty practice residency in Infectious Diseases at Rush University Medical Center in Chicago, IL. He worked as an Antimicrobial Stewardship Pharmacist at Carolinas Medical Center in Charlotte, NC before coming to Aspirus to lead the Aspirus System Antimicrobial Stewardship Program.

4. Actions to Support Optimal Antibiotic Use

- 2018-2020 Aspirus "Blue Card" outlining guidance in treatment recommendations, renal dosing, antibiogram and beta-lactam cross-reactivity table (allergy assessment) to guide appropriate antimicrobial therapy (**appendix B**). This card is accessible on the Aspirus intranet and has been distributed to AMHC providers.
- Inpatient CPOE standardized ordersets in EPIC have been updated and empiric medications available for ordering are based off of Aspirus Blue Card.
- A 48hr antibiotic time out "Best Practice Alert (BPA)" will be implemented in the electronic health record for inpatient antibiotic orders. After 48 hours of antibiotic therapy, a "pop up" will alert the provider of current antibiotics and recent culture results. The provider will be asked to acknowledge the BPA and choose an action in order to proceed: "will de-escalate", "discontinue", or "will continue current orders". The BPA will reappear again 72 hours later.
- IV to PO policy is currently in place outlining criteria for IV to PO transition. Interventions recommended by pharmacists are being tracked for acceptance rates.
- Renal dosing policy currently in place outlining procedures on when and how to adjust medications for renal dysfunction.
- Policy and protocol in place for pharmacists to dose and order levels and labs for vancomycin upon consult. Consults are highly recommended and are routinely used.
- Protocol in place for automatic change to extended infusion piperacillin/tazobactam by pharmacy.
- System and local sepsis workgroup formed to review sepsis guidelines, ordersets, and workflow.
- Daily (M-F) patient engagement rounds occur by a multidisciplinary team including hospitalist, pharmacist, nurse, RT, PT/OT, discharge planner and the patient. Antibiotic therapy, goals and recommendations are discussed during patient engagement rounding. Pharmacy is able to suggest interventions based on culture and sensitivity data, clinical presentation, lab values, etc. at this time.
- Culture and sensitivity data for inpatients are reviewed daily by pharmacist via utilization of a report sent daily with the prior day's culture collections. In house lab facilitates timely culture collection upon provider order.
- In April 2018, Codee Peterson and Tristan O'Driscoll will be participating in the AboutHealth antimicrobial stewardship collaborative which will include representatives from the 6 Wisconsin health systems that make up this accountable

Our 2018 TJC Visit

- 2 MDs, 2 RNs
 - Stewardship discussed in leadership, IP, potential for MM
 - Surveyors were very complimentary towards our efforts thus far
- Just because the visit is over, don't lose focus!





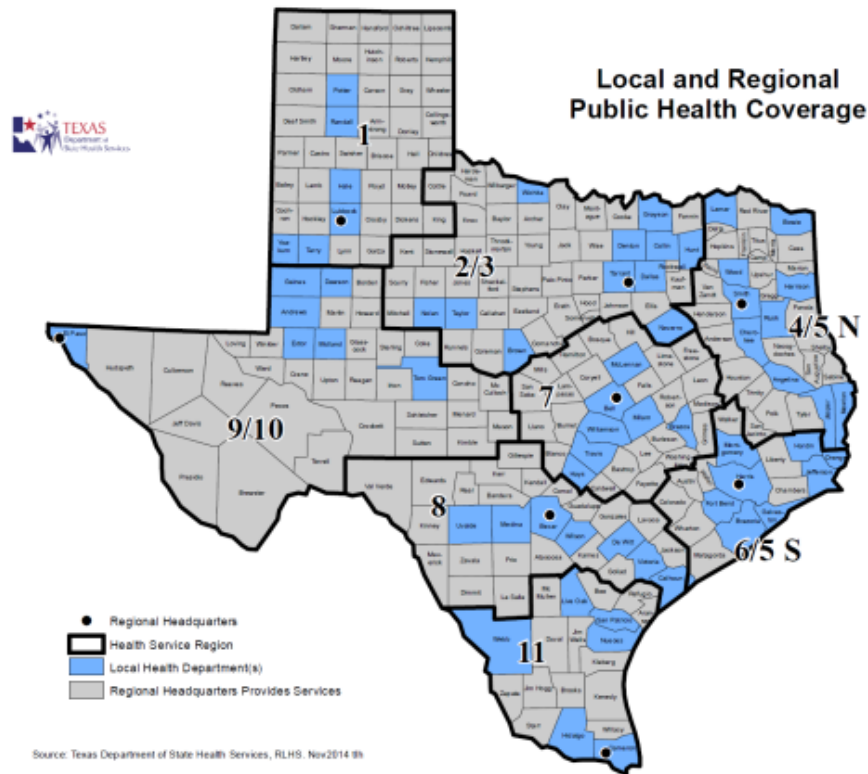
Getting Your Antimicrobial Stewardship Program Off the Ground in the Small and Rural Setting

Jonathan C. Cho, Pharm.D., M.B.A., BCPS
Clinical Assistant Professor
The University of Texas at Tyler

Practice Setting

- East Texas (Public Health Service Region 4/5N) is a region of approximately 1.5 million residents
- 29 out of 35 counties are classified as rural
- Four major health systems
- Two ID physician groups
- Two ID-trained pharmacists
- Two pharmacy residency programs

- 230-bed facility
- No clinical pharmacist



Background

- 20-50% of antimicrobial use is inappropriate
 - 30% is considered unnecessary
- 1 out of 5 emergency department visits are for ADRs due to antibiotic use
- >\$10 billion spent on antibiotics; >3.5\$ billion among hospitalized patients
- >70% of all United States hospitals have <200 beds
 - ~10% have <25 beds → critical access hospitals
- Median hospital size = 160 beds
- Lack of antimicrobial stewardship (AS) and antibiotic use data in small community and rural settings

Truth vs. Myth – Polling Slide

Antimicrobial usage rates differ between small and larger hospital.

- a) Truth
- b) Myth

Truth vs. Myth

Setting

- Utah; National Healthcare and Safety Network Reports from 2011-2013
- 15 small-community hospitals (SCHs) vs. 4 large-community hospitals (LCHs)

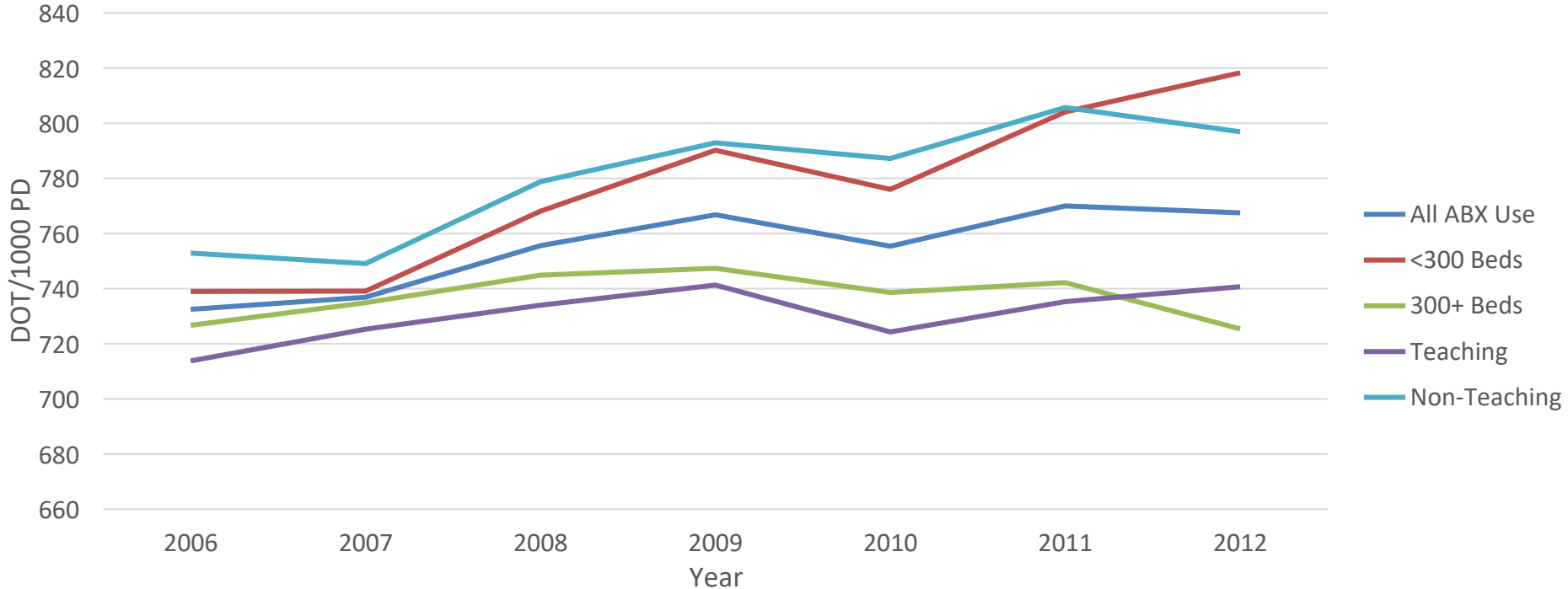
Results

- SCHs (median, 436 DOT/1000PD) vs. LCHs (509 DOT/1000PD)
- Broad-spectrum antibiotics accounted for 26% of use in SCHs and 32% in LCHs

Key Points

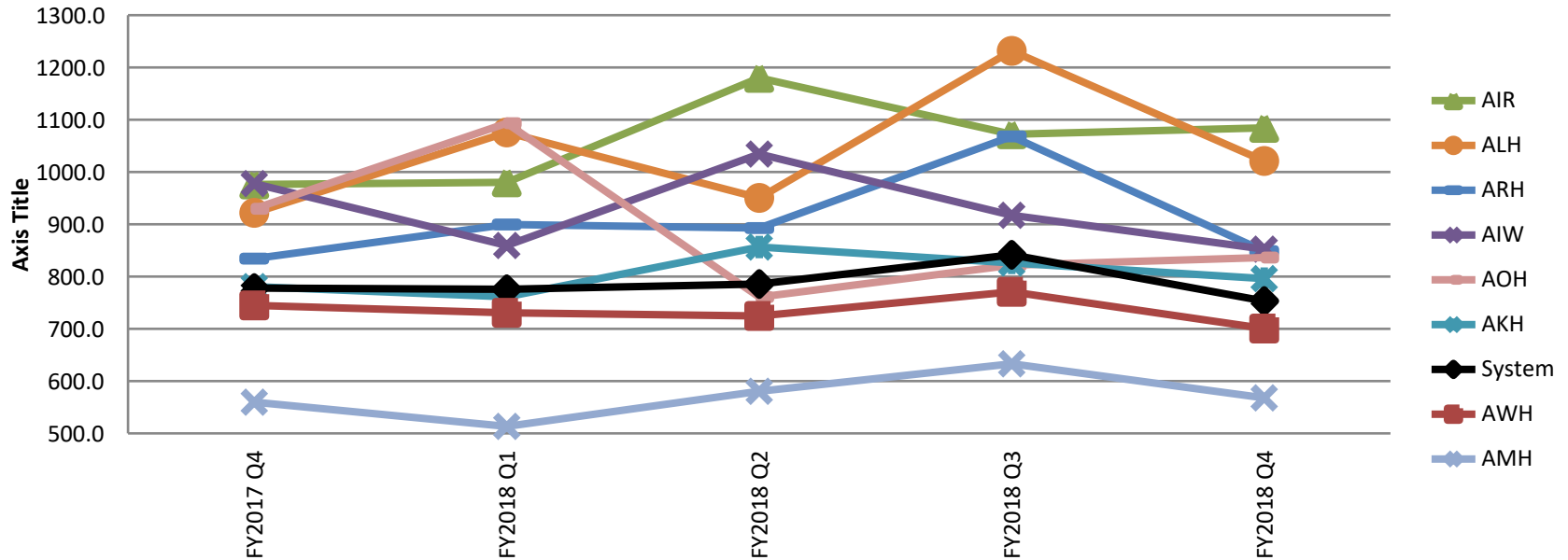
- Antibiotic usage rates did not differ between SCHs and LCHs
- Spectrum of antibiotics used did not differ between SCHs and LCHs

Estimates of Antibiotic Usage Trends



Estimates of Antibiotic Usage Trends

Total Abx DOT per 1,000 PD



Antibiotic Usage

Hospital Locations

- Medical unit
- Surgical unit
- Critical care unit
- Orthopedic ward
- Postpartum ward
- Specialty areas
- Neonatal units

Common Antibiotics Used

- Vancomycin
- Ceftriaxone
- Levofloxacin
- Piperacillin-tazobactam
- Gentamicin
- Azithromycin
- Metronidazole

Truth vs. Myth – Polling Slide

Antimicrobial resistance rates are lower in smaller hospitals.

- a) Truth
- b) Myth

Truth vs. Myth – Polling Slide

Smaller hospitals are less likely to have an active ASP.

- a) Truth
- b) Myth

Truth vs. Myth

7 Core Elements

Increase of hospital ASP practices from 40.9% to 48.1% in 2014-2015.

Small vs. Large

Hospitals with >200 beds were more likely to have an established ASP.

Conclusion

Comprehensive ASPs can be established in all facilities/sizes with leadership support.

Johannsson B. *Infect Control Hosp Epidemiol.* 2011;32:367-74.

Pollack LA. *Clin Infect Dis.* 2016;63:443-9.

O'Leary EN. *Clin Infect Dis.* 2017;65:1748-50.

What is the Problem?

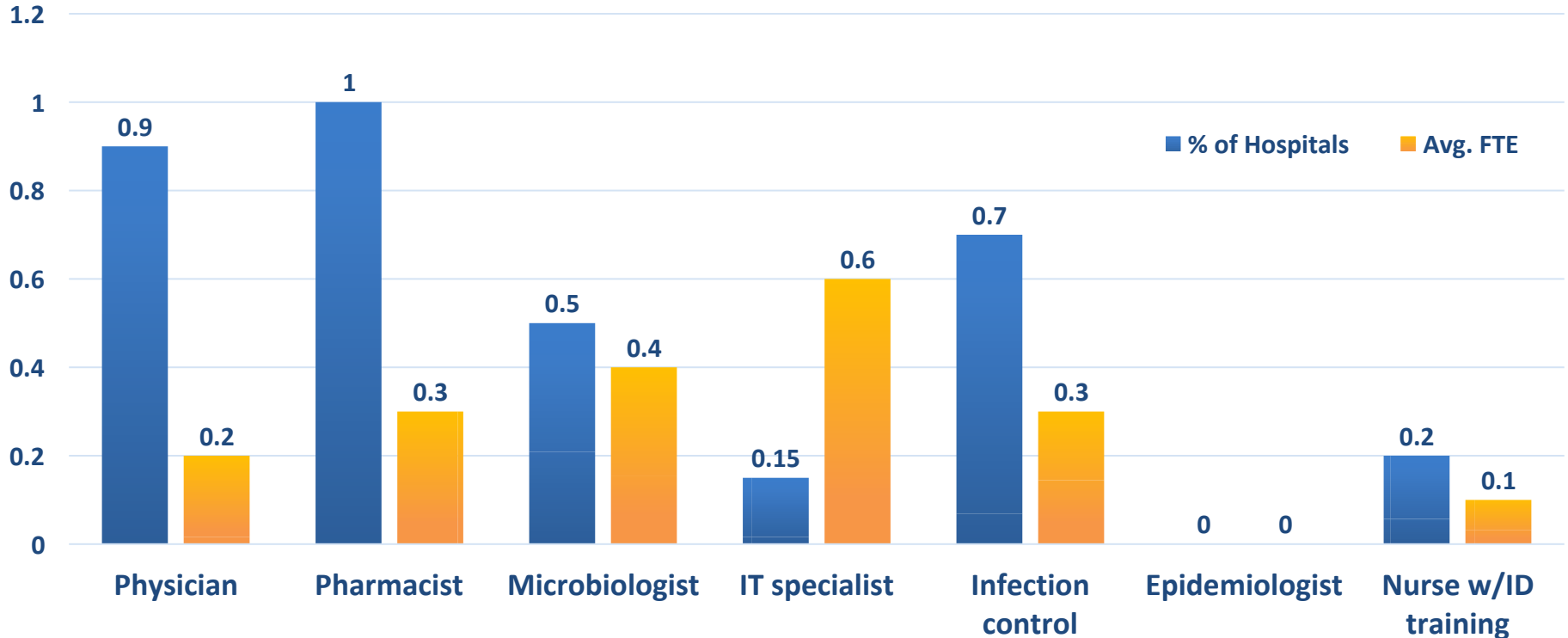
ASP Barriers

- Level of support from hospital administration
- Availability of ID/ASP-trained personnel
- Lack of involvement from other team members
- Educational resources available to hospital staff
- Lack of information technology resources
- Need more AS data in small and rural settings!

East Texas Data

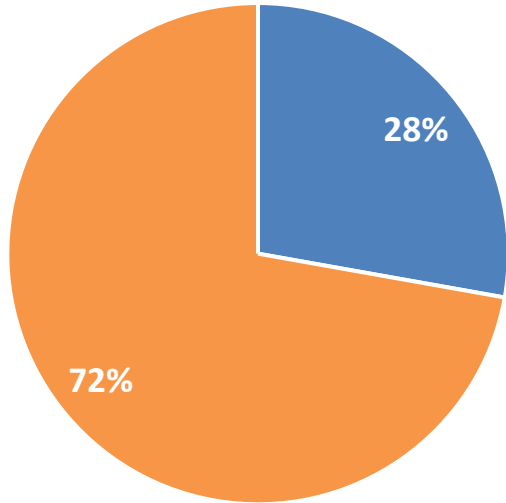
Demographics	N=20 (%)
Institution setting	
Academic medical center	0
Community teaching hospital	5 (25)
Community non-teaching hospital	15 (75)
Average daily census	
0-199	19 (95)
≥200	1 (5)
Length of ASP program	
<6 months	8 (40)
6-11 months	4 (20)
≥1 years	8 (40)

ASP Team Members and Resource Allocation



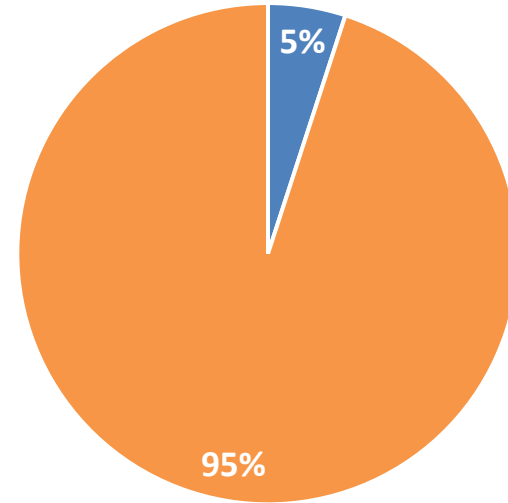
Formalized ID Training

Physicians



■ Formal ID Training ■ No ID Training

Pharmacists

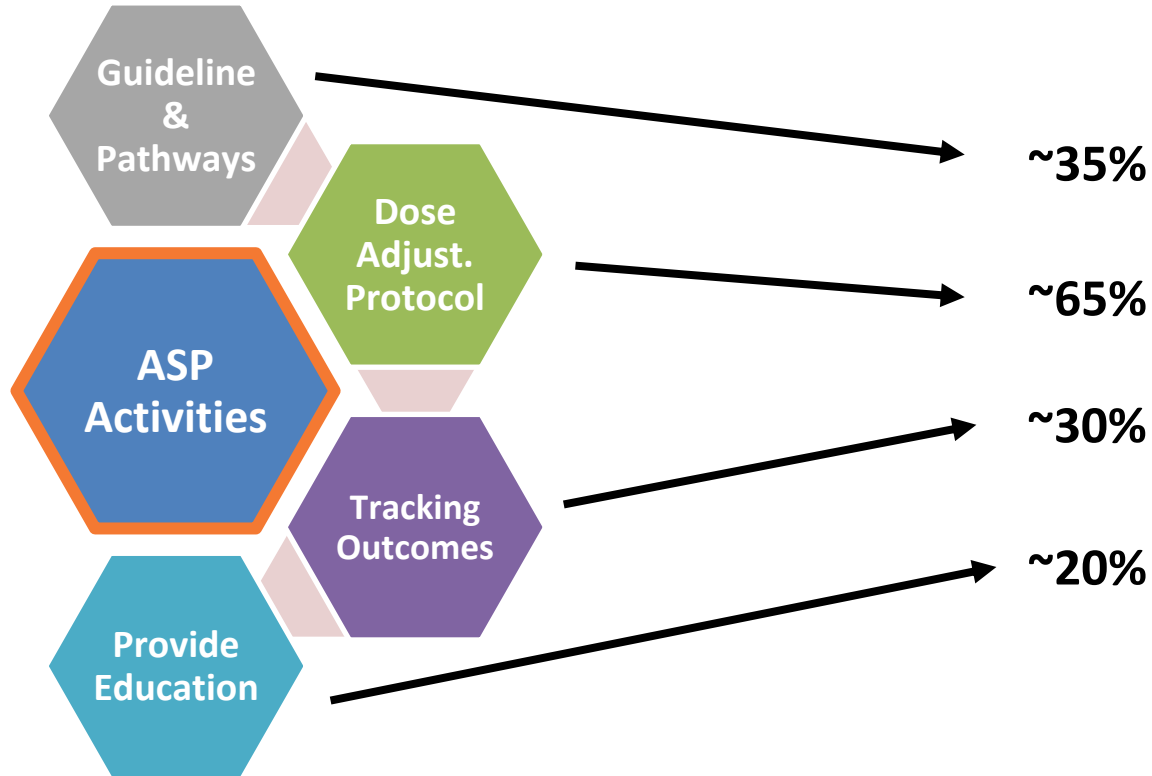


■ Formal ID Training ■ No ID Training

Available Support Documents

ASP Characteristics	All Hospitals N=20 (%)
ASP committee involvement	
Collaboration with infection control committee	14 (70)
Collaboration with pharmacy & therapeutics committee	18 (90)
Written statement of support from hospital leadership	14 (70)
Available support documents	
Leadership accountability documents	9 (45)
Budgeted financial support for ASP activities	5 (25)
Performance improvement plans	8 (40)
Strategic planning documents	7 (35)
Using electronic health record to collect ASP data	13 (65)

Stewardship Initiatives



Strategies: Leadership and Financial Support

- ASP is not just a requirement!
- Need to understand why ASP is important:
 - Improves patient outcomes
 - Optimizes antimicrobial resources
 - Mitigates development of antimicrobial resistance
- Present ASP plans, activities, and goals
- Present ASP needs and wants with justification
 - Aid in establishing ASP budget
- Share ASP interventions and outcomes!
 - Written letter of support is not enough

Antimicrobial Stewardship Program

- I. POLICY:**

The policy of _____ is to implement a comprehensive Antimicrobial Stewardship (AS) program to evaluate the judicious use of antimicrobial agents. This policy establishes key directives for antimicrobial prescribing and management at _____, using evidence-based practices and consultation from clinicians with infectious diseases training.
- II. PURPOSE:**

Antimicrobial Stewardship Program (ASP) will optimize the use of antimicrobial therapy and clinical outcomes while minimizing the unintended consequences of antimicrobial use, including toxicity and emergence of resistance. The ASP will also improve antimicrobial use and expenditures, and support initiatives to address regulatory requirements.
- III. DEFINITIONS:**

ASP Physician Co-Director: physician responsible for overall direction of the program, education, and goal development. He/she will be available for direct or indirect discussion to assist physicians with antibiotic education, selection, or discontinuation, attend antimicrobial rounds, and perform duties in conjunction with the ASP Pharmacist Co-Director.

ASP Pharmacist Co-Director: pharmacist responsible for overall direction of the program, education, and goal development. He/she will attend antimicrobial rounds, consults with physicians, and perform duties in conjunction with the ASP Physician Co-Director.

Empiric: antimicrobials given based on suspicion of infection but the infective pathogen is not known.

Directed: antimicrobials given that specifically targets a known pathogen.

Prophylactic: antimicrobials given to prevent acquisition or development of infection.
- IV. TEAM MEMBERS:**

ASP structure is displayed under Appendix A. Core members of this multidisciplinary ASP include providers, pharmacists and nurses functioning within their scope of practice and job description to manage patients with infectious diseases. Other ancillary members include infection preventionist, clinical microbiologist and information system specialist.



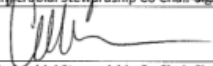
Strategies: Leadership and Financial Support

January 4, 2018

To succeed, antimicrobial stewardship programs (ASP) need clear support from facility leadership. Aspirus Medford Hospital's leadership is committed in many ways, as the board, executive team, leadership and professional staff clearly supports this commitment. We understand that dedicating necessary human, financial and information technology to resources is a key part of demonstrating our organization's commitment to effective stewardship.

The following statements below demonstrate leadership commitment at this organization:

- Antibiotic stewardship targets and goals have been established.
- Aspirus System resources will be utilized for consultative services on an as needed basis.
- The importance of improving antibiotic use and AMHC/ACR's commitment to ASP is communicated to key stakeholders.
- Stories, speakers and other resources that highlight how ASP can improve patient outcomes are shared across the system.
- ASP activity is integrated into quality improvement and/or patient safety initiatives and is reported to the Pharmacy and Therapeutics Committee (P&T) and Medical Staff Committee.
- Ongoing provider education programs are provided and tracked.
- Access to and availability of microbiology data and laboratory resources for ASP efforts has been supported.
- Necessary support from other disciplines (quality improvement staff, laboratory staff, IT and nurses) and specifics of their responsibilities to support the ASP will be established.
- Efforts and policies/procedures/protocols to hold providers accountable for improving antibiotic use will be established.

	1/4/18
Executive Signature	Date
	1-8-18
Antimicrobial Stewardship Co Chair Signature	Date
	1-18-18
Antimicrobial Stewardship Co Chair Signature	Date

Strategies: Financial Support

- AS grant funding opportunities
 - ASP development
 - Industry grants
 - Infectious diseases research
 - Infectious Diseases Society of America (IDSA)
 - Centers for Diseases Control and Prevention (CDC)
 - Society of Infectious Diseases Pharmacists (SIDP)
 - State/local AS initiatives
 - Texas Health and Human Services
 - Pharmacy practice advancement
 - ASHP Foundation

Strategies: Availability of ID-Trained Personnel

- **Ideal:** ASP co-led by ID trained physicians and pharmacists
- Recruit existing non-ID trained physicians and pharmacists
 - Should have protected time to perform AS-related activities
- Employ part-time ID physicians and pharmacists
- Utilize consultative ID/ASP networks

Setting	Intervention	Outcomes
155-bed community hospital	ASP led by non-ID trained pharmacist; other non-residency trained pharmacist contributed	<ul style="list-style-type: none">• 74% intervention acceptance• ↓ 26% in ABX expenditure• \$145,000+ direct savings• IV to PO conversion ↑ >600%

Strategies: ASP Action

- Integrate other staff to ASP activities
 - **Nurse practitioners/physician assistants:** serve as antimicrobial stewards
 - **Infection preventionists:** optimize surgical prophylaxis
 - **Microbiologists:** facilitate timely pathogen results
 - **Information technology personnel:** assist with data collection
 - **Nurses:** provide education to patients
 - **Pharmacy technicians:** obtain patient medication records
 - **Students, residents, fellows:** assist in AS-related activities

Strategies: ASP Action

- Establish a health-system level ASP
 - Pool resources related to protocols and guidelines
- Utilize national and state collaborative efforts
- Initiate AS activities on a small number of units
- Limit AS activity days based on amount of resources available
 - 3x weekly
- Track and monitor antimicrobial prescribing and guideline compliance
 - Invest in information technology and clinical decision support systems
 - Use CDC National Healthcare Safety Network Antimicrobial Use and Resistance module
- Create an antimicrobial stewardship checklist

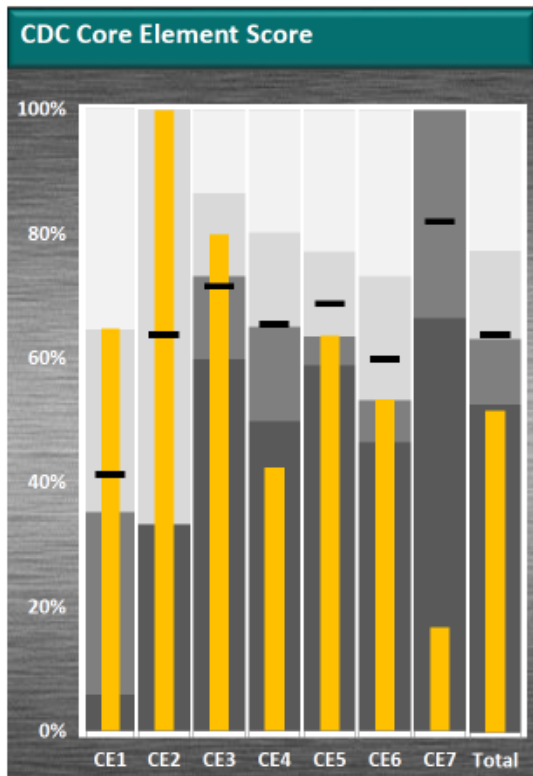
ASP Progress Report

Survey Response	Suggested Action Plan	Ease	Score (in %)
CE1. LEADERSHIP SUPPORT			
1) Does your facility have a formal, written statement of support from leadership that supports efforts to improve antibiotic use? (This often is in the form of an ASP charter signed by responsible parties and executive leadership)	yes		100%
2) Does your facility receive any budgeted financial support for antibiotic stewardship activities (e.g., support for salary, training, IT support)?	No salary support for AS	Easy	63%
Funded pharmacist hours	Funded pharmacist hours (please enter monthly FTE's in comment box)	Depending on your facility size and scope, an increase in AS pharmacist dedicated hours may be warranted at the facility. Review the documents on cost justification of an AS pharmacist in the TSS toolkit and discuss with facility leadership. Consider trending metrics and outcomes with AS pharmacist involvement to cost-justify increased hours.	
Funded physician hours	Funded physician hours (please enter monthly FTE's in comment box)	Discuss if resources available at facility in general and what projects would require IT help. If no dedicated funding available, consider discussing ad hoc participation.	Medium
Funded IT support hours		Investigate paid certification programs (MAD-ID, SDR) located in TSS toolkit for designated AS leaders at facility. Scholarships may be available from programs for qualified participants. If funding unavailable, consider free educational programs located in TSS toolkit education section.	Easy
Funded for training programs related to AS			
CE2. ACCOUNTABILITY			
4) Is there a physician leader responsible for program outcomes of stewardship activities at your facility?	yes, ID trained physician leader (Enter name in comment box)		100%
CE3. DRUG EXPERTISE			
5) Is there a pharmacist leader responsible for working to improve antibiotic use at your facility?	yes, part time (> 1.0 FTE) dedicated to AS (enter name in comment box)	Consider trending outcomes (pend, LOS, DOT, CDC) while part time pharmacist has been employed to increase hours to full-time, if appropriate. Review documents and publications in TSS toolkit for benefit of dedicated pharmacist.	Medium 62%
6) Does your facility have a dedicated meeting to discuss stewardship initiatives at least monthly?	yes		100%
KEY SUPPORT FOR THE ANTIMICROBIAL STEWARDSHIP PROGRAM			
7) Do any of the following work with the stewardship team to improve antibiotic use? (select all that apply)			96%
Physicians	Physicians		
Infection prevention or Epidemiology	Infection prevention or Epidemiology		
Quality Improvement	Quality Improvement		
Microbiology/Laboratory	Microbiology/Laboratory		
Information Technology	Information Technology		
Nursing	Nursing		
Practitioners (ARNP, PA)	Consider inviting ARNP or PA to join ASP, if available on-site. They can even serve ad-hoc when needed for specific initiatives or discussions.	Easy	
No team or meeting established			

Culture-grown invasive/bloodstream infections	no	Utilize Sentri7 upgraded rules released in Spring 2017 upgrade. Don't forget to follow-up with Rx Activity report to make sure staff are utilizing rules. There are separate rules based on preliminary ID (Gram's stain) and final ID. These results are broken down by microbiology (Gram-positive cocci, Gram-negative rods, etc.)	Easy
Community-acquired pneumonia	no	Utilize Sentri7 rules on CAP overtreatment. Don't forget to follow-up with Rx Activity report to make sure staff are utilizing rules.	Easy
CE5. TRACKING: MONITORING ANTIBIOTIC PRESCRIBING, USE, AND RESISTANCE			
PROCESS MEASURES			
36) Does your stewardship program monitor adherence to a documentation policy (dose, duration, and indication)?	yes		100%
37) Does your stewardship program monitor adherence to facility-specific treatment recommendations? (Recommendations include facility-specific guidelines, pathways, order sets)	yes		100%
38) Does your stewardship program monitor compliance with one or more of the specific treatment interventions in place? Interventions include active efforts to improve antimicrobial prescribing. This includes electronic prompts, reminders, Sentri-7 alerts, etc)	yes		100%
ANTIBIOTIC USE AND OUTCOME MEASURES			
19) Does your facility track rates of the following infections? (Confirm with facility infection preventionist or quality director)			100%
Clostridium difficile			
MRSA			
MRSE			
MRDRO			
20) Does your facility produce an antibiogram annually?	yes		100%
21) Does your facility monitor antibiotic use (consumption) at the unit or facility-wide level with any of the following methods?			12%
By duration of therapy or days on therapy (DOT)		Utilize upgraded DOT report within Sentri7 once released during second quarter 2018. Track and trend and share with ASP team. Please download the "ASP slide deck template" in the TSS toolkit under question 6. It was created to assist you in starting up an ASP. This slide deck explains the various data streams available and even has graphs that you can modify with your own facility data to present to the group. It also has a structured agenda to assist you in identifying talking points.	Easy
By defined daily dose (DDO)		Utilize quarterly DDO report to track and trend. Share this information with your ASP team. Please download the "ASP slide deck template" in the TSS toolkit under question 6. It was created to assist you in starting up an ASP. This slide deck explains the various data streams available and even has graphs that you can modify with your own facility data to present to the group. It also has a structured agenda to assist you in identifying talking points.	Easy
By expenditure			
CE6. REPORTING INFORMATION TO STAFF ON IMPROVING ANTIBIOTIC USE AND RESISTANCE			
22) Does your stewardship program share facility-specific reports on antibiotic use with prescribers?	yes, live presentation at MRC and/or P&T meeting yes, passive dissemination via mailer placed in mailboxes or emailed no	yes, live presentation at MRC and/or P&T meeting	63%
23) Has a current antibiogram been distributed to prescribers at your facility?			100%

Does a physician or pharmacist review courses of therapy for specified antibiotic agents (i.e. prospective audit with feedback) at your facility? (This is separate from an antibiotic limited or pre-authorization typically antimicrobials are identified that REQUIRE review by a clinician within a reasonable timeframe after prescription)	yes (Specify process in comment)			100%
PHARMACY-DRIVEN INTERVENTIONS				
14) Are the following actions implemented in your facility?				75%
Antimicrobial IV to PO conversion				
Antimicrobial renal or hepatic adjustment				
Antimicrobial dose optimization (P/P/E) to optimize the treatment of organisms with reduced susceptibility	7 days/week			
Automatic alerts in situations where antimicrobial therapy might be unnecessary/duplicative		Interventions not performed routinely		Easy
Time-sensitive automatic stop orders for specified antibiotic prescriptions	7 days/week			
PK monitoring for aminoglycosides	7 days/week			
PK monitoring for vancomycin	7 days/week			
Monitoring for vancomycin colitis, & other antimicrobials		Interventions not performed routinely		Medium
DIAGNOSIS AND INFECTION SPECIFIC INTERVENTIONS				
Does your facility have specific interventions in place to ensure optimal use of antibiotics to treat the following common infections? (Interventions are active, not passive, and can include alerts built in Sentri-7 or other software. Order sets are not interventions)				
15) Urinary tract infections	no	Encourage use of upgraded Acropomycin: bacteriuria rule in Sentri7 Spring 2017 upgrade. Don't forget to follow-up with Rx Activity report to make sure staff are utilizing rules.		Easy
Skin and soft tissue infections	no	Discuss wound caring with laboratory personnel during ASP meetings and identify any interventions to improve quality of cultures. Options include suppressing results of inappropriate "swab" "surface swabs" or providing a specific note that culture may represent colonization or contamination.		Medium
Surgical Prophylaxis	no	CHG released a strategy to review post-operative prophylaxis based on evidence from WHO and CDC. This was sent in an email from Dr. Simon to your facility's executive leadership and surgical directors. It is also available in the TSS toolkit. Look for ways to promote this strategy using active interventions.		Medium
Empiric treatment of MRSA	no	Utilize Green positive pathway published on pharmacy intranet to increase compliance with empiric regimen recommendations. Consider reviewing second line agents as a means of active intervention to discourage inappropriate use. Utilize upgraded MRSA rule within Spring release of Sentri7.		Medium
non-CDE (i.e. difficile infection) antibiotics in a patient with CDE	no	Utilize Sentri7 upgraded rules released in Spring 2017 upgrade. Don't forget to follow-up with Rx Activity report to make sure staff are utilizing rules.		Easy

ASP Progress Report



Quarterly Summary

	Subcategory	2017Q4	Trend	% Δ
CE1. Leadership support	2) ASP charter	100%	↔	0%
	3) Funding for AS activities	63%	▲	63%
CE2. Accountability	4) Physician leader	100%	↔	0%
	5) Pharmacist leader	60%	▲	60%
CE3. Drug expertise	6) Dedicated monthly AS meeting	100%	▲	100%
	7) Key support for the ASP	57%	▲	57%
	8-10) Policies	38%	▲	38%
CE4. Actions to support optimal antimicrobial use	11-13) Broad interventions	23%	▲	23%
	14) Pharmacy driven interventions	54%	▲	54%
	15) Diagnosis and infection specific interventions	0%	↔	0%
	16-18) Process measures	100%	▲	100%
CE5. Tracking AUR	19-21) Antibiotic use and outcome measures	23%	▲	23%
	22) Facility antibiotic use with prescribers	63%	▲	63%
CE6. Reporting	23) Antibigram distributed to prescribers	100%	▲	100%
	24) Antibiotic prescribing communications	20%	▲	20%
	25) Clinician and staff education	20%	▲	20%
CE7. Education	26) Patient education	0%	↔	0%
TOTAL SCORE		52%	▲	41%

Legend: Δ Change from baseline

Strategies: Utilization of Telehealth

- Telehealth resources
 - Advantages:
 - Allows access to ID-trained personnel
 - More convenient?
 - Potential cost savings
 - Disadvantages:
 - Technical training
 - Less frequent consultations
 - Regulations vary by state
 - Limited physical examination



Strategies: Utilization of Telehealth

Setting	Intervention	Outcomes
Two rural VA medical centers	Telecommunications via videoconference; weekly discussion of ID cases and AS-related education	<ul style="list-style-type: none"> • Sites A and B discussed 3.5 and 3.1 cases weekly • 73% vs. 65% acceptance rate
220-bed Brazil	Performed antimicrobial stewardship through telemedicine	<ul style="list-style-type: none"> • ↑ 51.4% appropriate ABX • ↓ consumption broad-spectrum ABXs (FQs, vanc)
Pediatric hospital Italy	ABX consultation per patient; biweekly discussion of cases	<ul style="list-style-type: none"> • ↓ MDRO isolation • ↓ ABX cost & packages/doses

Ceradini J. *Ital J Pediatr.* 2017;43:105.

Dos Santos RP. *J Telemed Telecare.* 2018;doi: 10.1177/1357633X18767702. [Epub ahead of print]

Stevenson LD. *Infect Control Hosp Epidemiol.* 2018;doi: 10.1017/ice.2018.197. [Epub ahead of print].

Strategies: Education

- Teaching hospital prescribers and staff
 - Continuing education presentations
 - Patient care rounds
- Written or e-mailed notification
 - Poster reminders
 - Institutional newsletter
 - AS annual competency
- Protocol and guideline development
 - Antibiograms
 - Treatment pathways
- Educate while making antibiotic recommendations

Resources for ASP Education

Materials and Forms

Contributed by Allina Regional Hospital Cardinal Health Pharmacy Solutions, Columbia University Medical Center, Intermountain Healthcare, the Johns Hopkins Hospital, and other members of SHEA's Antimicrobial Stewardship Task Force

- **Tools for Daily Activities of Stewardship:**

- [Emergency Department and Urgent Care Stewardship Toolkit](#)
- Peri-Operative Antibiotic Prophylaxis Blank Protocol (PDF, 20 KB)
- Adult Inpatient Antibiotic Approval Form, [PDF](#) (20 KB)
- Antibiotic Recommendation Form, [PDF](#) (20 KB)
- Blank Order Set for Antifungal Therapy, [PDF](#) (20 KB)
- Antibiotic Stewardship 360: Optimizing Outcomes, [PDF](#) (100 KB)
- [Toolkit for Reduction of *Clostridium difficile* Infections](#)

Join the "Stewardship" Listserv to connect with other experts in the field!

- **Policies, Procedures, and Guidelines:**

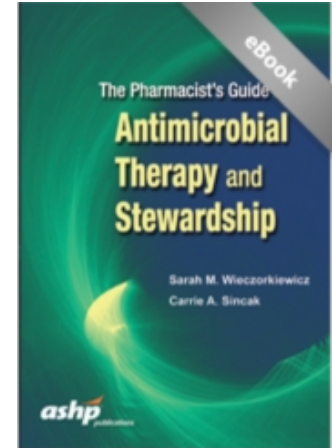
- State Strategies to Address Antimicrobial Resistance – Survey Results (ASTHO), [PDF](#) (538 KB)
- Sample Daily Pharmacist Checklist, [PDF](#) (268 KB)
- Drug Use Evaluation Form, [PDF](#) (99 KB)
- IV to PO Guidelines, [PDF](#) (380 KB)
- IV to PO Worksheet, [PDF](#) (24 KB)
- Justification and Protocol for Extended-Infusion Piperacillin/Tazobactam in Adult Patients, [PDF](#) (240 KB)
- Antibiotic Streamlining – Sample Pharmacist's Daily Routine, [PDF](#) (76 KB)

- **Business Case, Request for Proposal, and Job Description Examples:**

- Building a Business Case for ASP Presentation, [PDF](#) (982 KB)
- Antimicrobial Stewardship Program Proposal Sample 1, [PDF](#) (112 KB)
- Cost Analysis, [PDF](#) (14 KB)
- Antimicrobial Stewardship Program Proposal Sample 2, [PDF](#) (36 KB)
- RFP for ID Consultation and Post Prescription Antibiotic Rounding, Allina Regional Hospital, 2008, [PDF](#) (104 KB)
- Minnesota Guide to a Comprehensive Antimicrobial Stewardship Program, [PDF](#) (221 KB)

Resources for ASP Education

- Stewardship certificates programs (online/live courses)
 - Making a difference in infectious diseases (MAD-ID)
 - Society of Infectious Diseases Pharmacists (SIDP)
- ASP books, literature & guidelines
- Continuing education programs
 - CDC 4-part series (8 CEs)
- Institutional AS websites
 - Cleveland Clinic
 - Johns Hopkins
 - Nebraska Medicine
- Additional resources
 - Antibiotic dose calculator
 - Antibiotic spectrum tables



KEY TAKEAWAYS

1) KEY TAKEAWAY

Antimicrobial stewardship programs are needed in all practice settings, including small and rural hospitals, to mitigate the development of antimicrobial resistance.

2) KEY TAKEAWAY

Engaging administrators in the antimicrobial stewardship program's planning, goals, and activities can help obtain resources needed to optimize antimicrobial use.

3) KEY TAKEAWAY

Development of a successful antimicrobial stewardship program takes the engagement of a multidisciplinary team to develop attainable goals based on the resources available.

Self Assessment Question 1 – Polling Slide

Which of the following is NOT an element of performance listed under The Joint Commission's antimicrobial stewardship standard (MM.09.01.01)?

- a) Organizational leaders establish antimicrobial stewardship as a priority
- b) Education is provided to staff regarding antimicrobial stewardship
- c) The antimicrobial stewardship program identifies a list of restricted antibiotics
- d) An antimicrobial stewardship program is to involve a multidisciplinary team

Self Assessment Question 2 – Polling Slide

Which of the following is a tool that can be used to educate staff on antimicrobial stewardship?

- a) Annual computer based training modules required by all staff
- b) In person training during new hire orientation
- c) News capsules or newsletters
- d) All of the above

Self Assessment Question 3 – Polling Slide

Which of the following strategies can help overcome barriers of antimicrobial stewardship programs in the small and rural setting?

- a) Consultation services
- b) Telehealth
- c) Information technology
- d) All of the above

Questions, Answers, and Discussion

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